

ABSTRACT

A solid-state image sensing device that is free of kTC noise, can eliminate black smear and dark current, has a larger numerical aperture, and can eliminate the problem of insufficient area of the light-receiving portion. Photodiode PD is formed as the light-receiving portion in the formation region of first semiconductor region 15. Light is received by semiconductor layer 14 in this region, and the generated signal charge is accumulated. Semiconductor layer 12, 14, gate electrode for pixel selection 13a, first semiconductor region 15, second semiconductor region 16, third semiconductor region 17, etc., form transistor Tr_1 for pixel selection. The threshold of junction transistor JT_1 , composed of semiconductor substrate 10, semiconductor layer 14, and second semiconductor region 16, etc., is modulated by means of the signal charge accumulated in semiconductor layer 14 in the light-receiving portion. When transistor Tr_1 for pixel selection is ON, a voltage modulated according to the signal charge is output.